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## AGRICULTURAL NEWS LETTER

VOL. 2 - NO. 8

OCTOBER 1934

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THIS PUBLICATION GIVES INFORMATION on new developments of interest to agriculture based on the work done by chemists and agricultural field men of the du Pont Company and its subsidiary companies.

It also gives reports of results obtained with products developed by these companies in the field, whether the tests are made by field men of the companies, by agricultural experiment stations or other bodies. Also data on certain work done by agricultural stations on their own account and other matters of interest in the agricultural field.

This issue contains:

A discussion of soil erosion - also note on the United States Department of Agriculture motion picture film showing erosion control work.

How to prevent accidents to children from playing with blasting caps.

Control of Lace Bug on Asters and Chrysanthemums.

A widening use for a farm product - (soybeans).

Prevention of damping-off in greenhouses.

Synthetic organic insecticides.

Control of rhizoctoniase, a common disease of plants.

Failure of truck crops on new ground.

Issued by du Pont Company,  
Wilmington, Delaware,  
F. J. Eyrne, Editor.

THE TERRIBLE DAMAGE  
OF SOIL EROSION

NOTE:- The extract below is taken from the report on the Agricultural Experiment Stations, 1933, published by the United States Department of Agriculture. The prevention of soil erosion is a matter arresting the attention and involving the studies and efforts of a great number of specialists in many lines. The Agricultural Extension Section of the Explosives Department of the du Pont Company, has had its experts in the field working with government and state officials and has developed certain definite methods of checking soil erosion by means of explosives. Full data on these findings and instructions how to use explosives in this work can be had by addressing the Agricultural Extension Section of the Explosives Department of the du Pont Company at Wilmington, Delaware.

EDITOR.

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The extract referred to is under the general heading of Soil Conservation and Improvement. It states:

"Prevention of soil erosion.- According to a statement recently issued by the Department of Agriculture, soil erosion has already destroyed for crop production 35,000,000 acres of land in the United States formerly used for cultivated crops, and caused serious damage to 200,000 additional acres. The annual cost of the damage done by soil erosion and attendant injuries is estimated at not less than \$400,000,000.

"In cooperation with experiment stations and other State agencies, the Federal Government is studying the subject of erosion control on an extensive scale to find means which can be widely applied for protection against further ruin of about a million acres of naturally good land which is washing away and losing fertility at an alarming rate. Erosion projects have been set up in representative localities in different parts of the country, and soil-erosion control has been made an important feature of the work of the Civilian Conservation Corps in Alabama, Illinois, Indiana, Iowa, Kentucky, Minnesota, Mississippi, Ohio, Missouri, Oklahoma, Tennessee, and Wisconsin. The latter, however, is a large-scale demonstration applying such information as is now available and does not attempt work of a strictly research nature. It includes terracing, dams to control flood water, planting trees and soil binders, and the like, and is being done in cooperation with various bureaus of the Department and State agencies.

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"The efficiency of terracing to check soil erosion has been demonstrated by the Department and many of the experiment stations. The Missouri station has found that a good cropping system which leaves the soil bare as little as possible is a material aid in controlling erosion on both terraced and unterraced soil."

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The editor recommends to his readers the one-reel motion picture film entitled "CCC at Work, Erosion Control," which has recently been released by the Division of Motion Pictures, Extension Service, United States Department of Agriculture, Washington, D. C. This sound picture deals with the building of soil-saving dams and other steps necessary in the control of soil erosion, including some interesting scenes of the use of explosives in this important work. Copies of the film are available on request to the Division of Motion Pictures of the Department of Agriculture.

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### WILL YOU HELP PROTECT THE CHILDREN?

Here is a serious matter for all farmers, county agents, or individuals who use explosives. Blasting caps, which are useful and necessary tools for the proper detonation of explosives, are occasionally carelessly left about by workers. They sometimes fall into the hands of children. Some of the youngsters, thinking they are whistles or other harmless objects, pick them with pins. Others, out of curiosity, hammer them with rocks, throw them in bonfires, and otherwise explode them.

As a result, hundreds of children are injured annually through the negligence of their elders. Fingers are amputated, eyesight destroyed, hands mutilated, faces scarred, and many children lose their lives.

A blasting cap is a copper cylinder about a quarter of an inch in diameter and an inch or two long. It contains one of the most sensitive and impulsive explosives in common use.

There is an intensive campaign now being carried on throughout the country to prevent accidents to children from playing with blasting caps.

### WILL YOU HELP?

There is available a poster, 8½ x 11 inches, which is suitable for display on bulletin boards. There is also a motion picture film entitled, "How Jimmy Won the Game." This is available in 16 and 35 mm. widths. We shall be glad to put you in touch with campaign headquarters if you can use copies of the poster or show the film in schools, at grange meetings and other gatherings in your community.

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CONTROL OF LACE BUG ON  
CHRYSANTHEMUMS AND ASTERS

NOTE:- As was announced in the AGRICULTURAL NEWS LETTER some months ago, the Grasselli Chemical Company of Cleveland Ohio, has produced a new contact insecticide which is being marketed under the name of Loro. It is being given practical tests in various parts of the country on various insects. Recently, there has been rather threatening damage done by the lace bug and we have asked the Grasselli Chemical Company to give us some data on this together with the results of their attempt to control it with Loro. They have done so in the following statement. -- EDITOR.

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The lace bug, a minute insect with transverse brown stripes on gray protective wings, with peculiar slow crawling movements, and with a habit of flattening itself in groups of several adults on leaves and blossoms, - has been very destructive on the aster crop this summer and has now attacked the greenhouse crop of chrysanthemums in Northern Ohio and possibly other midwestern areas.

Commercial florists, many of whom have never been troubled with this insect before, have found it extremely difficult to control with ordinary materials. It is practically impossible to control this insect on outdoor plantings closely approximating fields or ragweed, smartweed, etc. Reinfestation is very rapid from weed fields.

In commercial greenhouses in the Cleveland area, several prominent chrysanthemum growers report a complete clean up of young and old stages of this insect with two applications of Grasselli new synthetic organic contact insecticide, Loro, at one to 800 and a soap spreader at one to 250.

In an actual experiment on asters, repeated four times, using Loro at 1:800 with a tar soap spreader at 1:250 under greenhouse conditions - a 100 per cent kill of adults (most difficult stage to exterminate) occurred on an average in fifteen minutes after spraying was completed. It took an average of one minute for the first adult to succumb. No recovery occurred among the insects used in the test. No staining or injury occurred to foliage or bloom when checked at regular intervals over a period of five days.

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Report of Pest Control Division,  
Grasselli Chemical Company,  
Cleveland, Ohio.



## A WIDENING USE FOR FARM PRODUCTS

In the September issue of the AGRICULTURAL NEWS LETTER, a page was devoted to a discussion of the utilization of agricultural products for industrial chemical manufactures. It has been said that "the chemistry of the utilization of agricultural products and by-products or wastes is still in its infancy." In this connection, we reproduce a discussion of what is being done with soybeans, taken from a publication of the United States Department of Agriculture recently issued, dealing with the activities of agricultural experiment stations throughout the country. The reference is as follows:

"Soybeans - Soybeans have been adapted to Delaware conditions by selection, variety testing, inoculation and fertilizer investigations of the Delaware station. The importance of such work is indicated by the fact that the seed crop alone has been worth more than \$3,000,000 to Delaware farmers in the last ten years.

"Soybeans have become a major crop in various parts of the country. A recent bulletin of the Illinois station says:

'Soybeans important for centuries in certain oriental countries, have recently claimed a position in the national economy of the United States well beyond that which might have been expected even a few years ago by persons not fully familiar with the wide range of uses of this crop and its adaptation to the soils, climates, and farming systems of this country.'

"The station has recently reported an exhaustive study of present production, potential markets, possible improvements in marketing, and various features which affect the price of soybeans and soybean products. The present production of soybeans in the United States is stated to be between one third and one half million tons annually, nearly nine percent of which is produced in the East North Central States and seven percent in the South Atlantic and East South Central States. Production and use of the beans for feed, oil, and other purposes are shown to be increasing.

"In a surprisingly brief period soybeans have become the object of widespread attention among dealers and among leaders in numerous industries. The extent to which soybean oil can be used to advantage is being determined more and more accurately by research specialists in establishments producing paint, soap, and edible products."

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PREVENTION OF DAMPING-OFF IN GREENHOUSES

Formaldehyde dust has been found, by the Ohio Station, to be effective as a means of preventing damping-off in growing seedlings in the greenhouse. Detailed directions for preparation and use of the dust have recently been published by the station.\*

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\*Page 31, Report on Agricultural Experiment Stations 1933, by the United States Department of Agriculture.

## SYNTHETIC ORGANIC INSECTICIDES

In the September 1934 issue of the AGRICULTURAL NEWS LETTER, we had a discussion of the above subject by Dr. Paul L. Salzberg, research chemist for the du Pont Company. It is interesting to note in this connection that the United States Department of Agriculture, state agricultural experiment stations and research men of such organizations as the du Pont Company are engaged in trying to find a solution of the so-called spray residue problem which is brought about by the use of dusts and sprays containing poisons which are toxic to humans.

A phase of the problem which confronts the chemist was recently brought out in one of the publications of the United States Department of Agriculture where it was stated that in studying the question of reducing dosage of insecticides, the problem was complicated by the apparent increase in tolerance of poisons by certain insects.

For example, it was stated, the codling moth, one of the most destructive insects with which the orchardist has to deal, is, according to the Missouri Station, becoming increasingly difficult to control with ordinary sprays. It was stated that it has been found to be true that the less hardy of the insects are being killed off and that those which survive are producing a progeny which is becoming more and more insensible to the use of certain poisons and so a more intensive study of the synthetic organic insecticides would seem to be timely as it is in this field that many of the most important research chemists believe that the materials which will furnish the best control of insects will be found.

As Dr. Salzberg pointed out last month, the big advantage of synthetic organic compounds as a class is that they can be made to order for a specific purpose and consequently present numerous possibilities for meeting the demands of the ideal insecticide. This is because an organic insecticide does not necessarily depend on one element for its effectiveness but rather on the way in which a few non-toxic elements are combined.

So many positive results have been achieved in the chemical laboratories, that growers are looking forward with the greatest interest to the work now being done by the research chemists in this line.

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### CONTROL OF RHIZOCTONIOSE

Agricultural authorities express concern because of the general and serious damage to vegetables, berries and other forms of plant life which results from rhizoctoniose, a name applied to certain diseases of a large number of plants of various ages, that are caused by a rhizoctonia solani soil inhabiting fungus.

Reports of the ravages of this highly destructive fungus have been made from different and widely-separated parts of the country, with heavy losses from rhizoctoniose observed in Florida, Texas, California and other states.

"Rhizoctoniose is a widespread disease in Florida, occurring on sandy, clay, marl and muck soils," says a press bulletin of the Florida Agricultural Experiment Station, Gainesville. "All told," this bulletin continues, "the losses caused by this disease are enormous because of its destructive nature and the large variety of plants it attacks. It damages plants in Florida throughout the entire year and is particularly important in the vegetable-growing areas during the winter and early spring-growing period.

"Control of Rhizoctoniose in Florida is extremely difficult because of its wide distribution, its parasitic and saprophytic phases, its resistance to unfavorable conditions, the large variety of plants attacked, the various stages of the plant growth attacked, its development throughout the year and the expense of applying thorough methods.

"Except in the case of white potatoes, rhizoctoniose is not extensively seed-borne. Potatoes free of the disease should be planted. Soil used for seed-bed purposes should be thoroughly disinfected by steam, formaldehyde or Semesan.

"An application of liquid Semesan, one pound to 48 gallons of water, one ounce to three gallons of water or one level teaspoonful to one and one third quarts of water, should be made to the seedlings a day or two after emergence when still in the cotyledon stage.

"Diseased areas in seed beds should be wet with a 1-50 formaldehyde solution and the top two inches of soil removed immediately from the seedbed. Do not transplant seedlings from diseased portions of the seedbed to the field. Plow under all plant refuse as soon as the crop is removed. Remove unsalable fruits from the field and practice sanitation whenever possible. Rotate the crops so that susceptible crop plants do not follow each other season after season. Develop adequate drainage for the land. Irrigate more thoroughly and less frequently. Give covered seedbeds all the ventilation possible."

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### FAILURE OF TRUCK CROPS ON NEW GROUND

As has often been noted, failure frequently follows attempts to grow crops on new ground, leading to a general opinion among farmers, especially truck growers, that new ground is not suited to the growing of many crops the first year after clearing. The Alabama Agricultural Experiment Station has done some important work in the study of this subject and has found that such failure in the case of Alabama soils is generally due to deficiency of available phosphorus and an insufficient amount of available nitrogen in the new soils and has shown that if these deficiencies are corrected, new ground soils may be productive.

This is the substance of a note in the Report on the Agricultural Experiment Stations, 1933, issued by the United States Department of Agriculture. In view of the importance of this subject, the editor of the AGRICULTURAL NEWS LETTER wrote to the Alabama Experiment Station and L. M. Ware, head of the Horticulture and Forestry Department of that station was good enough to reply giving some statements covering the work which has been done in this regard at that station.

The statement is as follows:

"We started in 1931 a substation in Baldwin County which is one of the counties bordering the Gulf. We were told by truck growers in the section that it would be useless to attempt to grow on new ground many of the truck crops commonly grown in that section. We were successful, however, in growing every truck crop attempted the first year. Along with it a study was made to determine why failure had in the past been the experience of truck growers on newly cleared land. There were two factors apparently which were responsible for these failures. These were a complete absence of available phosphorus and a tying up of applied nitrogen by bacterial activity.

"We have never recommended for example in this state, mineral fertilizers for corn on old land. Corn grown on new land produced without phosphorus, no corn whatsoever; 41 bushels were produced by the first increment of phosphorus. Other crops responded as follows: Snap beans, four bushels and 72 bushels; cucumbers no and 24 bushels; sweet potatoes, 24 bushels and 174 bushels; cabbage, no and 5.6 tons; Irish potatoes, 14 and 147 bushels respectively per acre where no phosphorus and the first increment was applied. With all of these crops, of course, nitrogen and potash were supplied.

Continued on following page.

"An idea as to the locking up of the nitrogen by bacterial activity the first year may be had from a study of the yields of cabbage for the first and second year from new ground. Increments ranging from 0 to 4, 8, and 12 percent nitrogen on a 1,500 pound per acre basis, gave .8, 1.4, 4.9, and 9.5 tons per acre respectively for the different increments the first year. The second year the same treatments produced 2.86 tons, 9.01, 6.56, and 8.14 tons per acre. A study of this problem in the greenhouse showed that there was a tying up of nitrates and other available form of nitrogen by bacteria and a later release of the nitrogen tied up. This probably accounts for the fact that four percent of nitrogen, the second year, gave the highest yield of any amount used.

"A further idea of the tying up of nitrogen may be had by these few figures. Irish potatoes on new ground without nitrogen produced 38 bushels the first year and 146 bushels for the first increment. The second year 108 bushels were produced without nitrogen and 133 bushels with the first increment. With sweet potatoes 81 and 167 bushels were produced the first year without any nitrogen and without the first increment. The second year the sweet potato yields were 209 and 225 under the same conditions. There are indications that the nitrogen tied up early in the season becomes available even during the latter part of the first season. An early crop of sweet potatoes was produced, 81 bushels and 167 bushels being the yields of no nitrogen plots and plots receiving the first increment of nitrogen. A crop of late potatoes produced for the same treatments, 171 and 176 bushels respectively.

"It is quite evident, therefore, truck growers have in the past overlooked the necessity of supplying phosphorus or they have overlooked the necessity of supplying an amount of nitrogen greater than that required by crops growing on older land."

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